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EXAMINER	
WANG, JIN CHENG	
ART UNIT	**PAPER NUMBER**
2628	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/762,981	KODAMA ET AL.	
	Examiner	Art Unit	
	Jin-Cheng Wang	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's submission filed on 12/11/2006 has been entered. Claims 20-25 have been newly added. Claims 1-19 have been canceled. Claims 20-25 are pending in the application.

Response to Arguments

Applicant's arguments filed December 11, 2006 have been fully considered but are not found persuasive in view of the new ground(s) of rejection set forth below.

For example, the claim 20 set forth the recitation of "if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains" set forth in the image size adjusting unit of the claim 20. Applicant failed to provide support to the claimed feature of the image size adjusting unit of the claim 20 if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains. The applicant's specification discloses "no odd tile image portion remains" which is opposite to the claim limitation set forth in the claim 20.

In the paragraph 0041 of the applicant's specification, it is stated, "if the image size of the original image is not divisible by the tile size, the image size adjusting unit 42 adjusts the image size before the compressing unit 44 encodes the image data so that **no odd tile remains...so that the odd tiles that do not cover the image do not remain**." However, applicant's claim 20 set forth the claim limitation of "an odd image portion remains" which is in contrary to the functionality of the image size adjusting unit of the claim 20. Moreover, this is opposite to the paragraph 0041's statement that "no odd tile remains." Additionally, in paragraph 0043 of

applicant's specification, it is stated, "in this case, pixels are added to the odd tiles 52 as shown in Fig. 6C as a shaded portion so that the extended image 53 can be divisible by the tiles". In other words, when the extended image 53 can be divisible by the tiles, no odd tile remains.

Applicant's claim 20 set forth the recitation "an attaching unit to attach information indicating the size of the image **before its size is adjusted**, in a marker segment included in the code-stream formed by the code-stream generation unit." Applicant failed to provide support to the claimed feature of indicating the size of the image before its size is adjusted in a marker segment included in the code stream by the code-stream generation unit. The applicant's specification discloses indicating the size of the image AFTER its size is adjusted in a marker segment included in the code stream by the code-stream generation unit, which is opposite to the claim limitation set forth in the claim 20.

In Fig. 5A, the compressing unit 44 and the code-stream generation unit 45 are the blocks performed within the encoder unit 23 AFTER the image size adjustment unit 42. In paragraph 0040 of the applicant's specification, it is stated, "The image reading unit 41 reads image data of a band from the band buffer 22. The compressing unit 44 encodes the image data as a whole or encodes each tile independently, into which tiles the image data are divided...The code data encoded by the compressing unit 44 are combined into a code-stream by the code-stream generation unit 45. Information related to the size of the original image is recorded in the COM tag in the code-stream." In other words, the attaching unit performs the attaching operation by recording the COM tag in the code-stream after the code-stream generation unit 45 generates the code-stream. The attaching unit indicates the size of the image AFTER its size is adjusted, as

opposed to BEFORE its size is adjusted, in a marker segment (by JPEG 2000 encoder) included in the code-stream formed by the code-stream generation unit.

As address below, the Claims 1-3, 5-9 and 11-14 and 16-19 are unpatentable over U.S. Patent No. 6,904,176 (hereinafter Chui) in view of Satoh et al. U.S. Patent No. 6,895,120 (hereinafter Satoh) and Murao U.S. Patent No. 6,141,452 (hereinafter Murao).

For example, Chui discloses an image processing apparatus, comprising:

An image reading unit to read an image (Chui Figs. 29-30, e.g., dataport 3060 for sending and receiving images, e.g., from the image files);

An image size adjusting unit to adjust the size of the image read by the image reading unit if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains;

Also referring to the claim 21, Chui discloses an encoder having an image size adjusting unit. Chui discloses processing logic divides each image of different resolution into a number fixed sized tiles. When the image cannot be divided evenly, padding by 0's may be necessary as shown in Fig. 2A (meeting the claim limitation set forth in the claim 22) wherein padding by 0's adjusts the size of the image. In Fig. 2A, an image at full resolution is divided into equal sized square tiles and because the last column of tiles are not square, zeros have been added onto the right edge of the image to enable the last column of tiles to be square. The fixed sized tiles are further labeled. The processing logic encodes each tile by encoding the (i, j)th tile of the lowest resolution using JPEG as shown in Fig. 3A. The JPEG encoder encodes the tile to create compressed bitstream to be sent to the decoder. The claim recites "size adjusted image",

however, notwithstanding Chui's disclosure of adjusting the size of the original image, Chui also discloses compressing bitstream, thus adjusting the size of image at the stage of discrete cosine transform.

A compressing unit to divide the image output from the size adjusting unit into one or more tiles and to compress the image by the tiles to generate code data;

Chui discloses an encoder having a compressing unit. Chui further discloses the image encoder module 3070 which include an encoder control program controlling the processing of compressing and encoding an image (See column 17, lines 5-15).

Chui discloses adjusting the size of the image to create a quantized DCT transformed image tile wherein the quantized DCT transferred image tile is entropy encoded to create compressed bitstream (Chui column 6, lines 44-63).

A code-stream generating unit to combine the code data generated by the compressed unit to generate a codestream;

Chui discloses an encoder having a code-stream generating unit. Once all the tiles of an image have been transformed, compressed and encoded, the resulting encoded image data is stored as an image file wherein the image file includes header data and a sequence of image data structures (See column 18, lines 15-20). The header of the image file includes the information needed to access the various image subfiles wherein the header stores a parameter value that indicates the number of image subfiles in the file and the size of each image data structure. Each image subfile has a header and a sequence of bitstreams wherein the header data of each base image subfile includes fields that indicate the size of the image subfile and the size of the tiles used to tile the image, the number of bitstreams encoded for the image for each tile of the image

and the header information for each bitstream including the size of the bitstream (See column 18, lines 40-67 and column 19, lines 1-20).

An attaching unit to attach information indicating the size of the image before its size is adjusted, in a marker segment included in the codestream formed by the codestream generation unit.

Therefore, the encoded image as stored in the image file contains information related to the size of the tiles used to tile the image and the number of image subfiles leading to the size of the image. Chui is seen to disclose an image encoder unit or the compressing unit that performs the function of the information attaching unit to attach to the codestream (bitstream of the encoded image), the size of the tiles, the number of the image subfiles, the size of each image data structure and thus Chui discloses the claim limitation of "information related to the size of the image".

Chui thus further discloses an information attaching unit to attach, to the codestream, information related to the size of the image.

It needs to be shown whether Chui explicitly discloses attaching information indicating the size of the image in a marker segment included in the code-stream formed by the code stream generation unit.

Chui implicitly discloses the claim limitation of attaching information indicating the size of the image in a marker segment included in the code-stream formed by the code stream generation unit. Once all the tiles of an image have been transformed, compressed and encoded, the resulting encoded image data is stored as an image file wherein the image file includes header data and a sequence of image data structures (See Chui column 18, lines 15-20). The

header of the image file includes the information needed to access the various image subfiles wherein the header stores a parameter value that indicates the number of image subfiles in the file and the size of each image data structure. Each image subfile has a header and a sequence of bitstreams wherein the header data of each base image subfile includes fields that indicate the size of the image subfile and the size of the tiles used to tile the image, the number of bitstreams encoded for the image for each tile of the image and the header information for each bitstream including the size of the bitstream (See column 18, lines 40-67 and column 19, lines 1-20).

Satoh further discloses setting zero bitplanes and using extra bits to give more tag tree information in a tile component level partition in JPEG 2000 compliant encoding algorithm; e.g., column 2, 24 and 29-30. Satoh further discloses the codestream relating to a tile, organized in packets, are arranged in one, or more, tile-parts and a tile-part header, comprised of a series of markers and marker segments or tags contains information about the various mechanisms and coding styles that are needed to locate, extract, decode and reconstruct every tile-component. Satoh discloses other claim limitations set forth in the claim 20 and similar claims as well.

For example, Satoh discloses

An image reading unit to read an image (Fig. 29);

An image size adjusting unit (column 30) **to adjust the size of the image read by the image reading unit if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains;**

A compressing unit to divide the image output from the size adjusting unit into one or more tiles and to compress the image by the tiles to generate code data (*column 28 and 30, Satoh further discloses the MQ coder generating a codestream relating to a tile, organized in*

packets having the packet headers for a tile and the packets are arranged in one, or more, tile-parts and a tile-part header and column 2 wherein the cited reference discloses that the compressing mechanism including the wavelet transformation, quantization and entropy coding in which the code-block are entropy coded with three coding passes wherein the entropy coder reduces the number of bits required to represent the quantized coefficients compared to the original image);

A code-stream generating unit to combine the code data generated by the compressed unit to generate a codestream (*column 28 and 30 wherein the codestream is generated by the MQ coder*);

An attaching unit to attach information indicating the size of the image before its size is adjusted, in a marker segment included in the codestream formed by the codestream generation unit (*see column 2, 28 and 30, the codestream relating to a tile, organized in packets are arranged in one or more tile parts and a tile-part header, comprised of a series of markers and marker segments, or tags contains information about the various mechanisms and coding styles that are needed to locate and extract every tile-component. At the beginning of the entire codestream is a main header comprised of markers and marker segments that offers similar information as well as information about the original image*).

It would have been obvious to have combined the teachings of Satoh and Chui to encode the original mage into the size-adjusted image using the JPEG encoder so that the original image is encoded. Both Satoh and Chui disclose the JPEG encoding process (See Chui column 15, line 1 and Satoh column 2, 24 and 29-30). Therefore, having the combined teaching of the cited

references, one of the ordinary skill in the art would have been motivated to do so to allow the generation of a code-stream via lossless compression of the original image (Satoh *column 2*).

It needs to be shown whether Chui and Satoh teach the claim limitation of "if the size of the read image is not an integral multiple of a predetermined tile size and when divided into tiles, an odd image portion remains."

Chui discloses processing logic divides each image of different resolution into a number fixed sized tiles. When the image cannot be divided evenly, padding by 0's may be necessary as shown in Fig. 2A wherein padding by 0's adjusts the size of the image. In Fig. 2A, an image at full resolution is divided into equal sized square tiles and because the last column of tiles are not square, zeros have been added onto the right edge of the image to enable the last column of tiles to be square. **The fixed sized tiles are further labeled.** The processing logic encodes each tile by encoding the (I, j)th tile of the lowest resolution using JPEG as shown in Fig. 3A. The JPEG encoder encodes the tile to create compressed bitstream to be sent to the decoder. Thus, Chui at least suggests the claim limitation "if an image is not evenly divisible into a number of fixed size regions that are equivalently sized, adjust the size of the image" because padding by 0's to the image adjusts the size of the image.

Murao demonstrates the claim limitation Fig. 7b and 7d, column 5, lines 15-25 and column 6, lines 48-60, the image size adjusting unit adjusts size of the original image to the suitable size for a Wavelet transform.

It would have been obvious to have combined the teachings of Chui, Satoh and Murao to adjust the size of the original image so that the image is evenly divisible into a number of fixed size tiles. Doing so would allow the efficient compressing and restoring of the images to reduce

the computing time and the amount of memory needed using the Wavelet transform and inverse Wavelet transform (Murao column 3, lines 25-30, Chui Fig. 2A and Satoh column 28 and 30).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 20-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

For example, the claim 20 set forth the recitation of "if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains" set forth in the image size adjusting unit of the claim 20. Applicant failed to provide support to the claimed feature of the image size adjusting unit of the claim 20 if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains. The applicant's specification discloses "no odd tile image portion remains" which is opposite to the claim limitation set forth in the claim 20.

In the paragraph 0041 of the applicant's specification, it is stated, "if the image size of the original image is not divisible by the tile size, the image size adjusting unit 42 adjusts the image size before the compressing unit 44 encodes the image data so that **no odd tile remains...so that**

the odd tiles that do not cover the image do not remain." However, applicant's claim 20 set forth the claim limitation of "an odd image portion remains" which is in contrary to the functionality of the image size adjusting unit of the claim 20. Moreover, this is opposite to the paragraph 0041's statement that "no odd tile remains." Additionally, in paragraph 0043 of applicant's specification, it is stated, "in this case, pixels are added to the odd tiles 52 as shown in Fig. 6C as a shaded portion so that the extended image 53 can be divisible by the tiles". In other words, when the extended image 53 can be divisible by the tiles, no odd tile remains.

Applicant's claim 20 set forth the recitation "an attaching unit to attach information indicating the size of the image **before its size is adjusted**, in a marker segment included in the code-stream formed by the code-stream generation unit." Applicant failed to provide support to the claimed feature of indicating the size of the image before its size is adjusted in a marker segment included in the code stream by the code-stream generation unit. The applicant's specification discloses indicating the size of the image AFTER its size is adjusted in a marker segment included in the code stream by the code-stream generation unit, which is opposite to the claim limitation set forth in the claim 20.

In Fig. 5A, the compressing unit 44 and the code-stream generation unit 45 are the blocks performed within the encoder unit 23 AFTER the image size adjustment unit 42. In paragraph 0040 of the applicant's specification, it is stated, "The image reading unit 41 reads image data of a band from the band buffer 22. The compressing unit 44 encodes the image data as a whole or encodes each tile independently, into which tiles the image data are divided...The code data encoded by the compressing unit 44 are combined into a code-stream by the code-stream generation unit 45. Information related to the size of the original image is recorded in the COM

tag in the code-stream." In other words, the attaching unit performs the attaching operation by recording the COM tag in the code-stream after the code-stream generation unit 45 generates the code-stream. The attaching unit indicates the size of the image AFTER its size is adjusted, as opposed to BEFORE its size is adjusted, in a marker segment (by JPEG 2000 encoder) included in the code-stream formed by the code-stream generation unit.

The claims 21-22 depend upon the claim 20 and are rejected due to their dependency on the claim 20.

The claim 24 is subject to the same rationale of rejection set forth in the claim 20.

Applicant's claim 23 set forth the recitation "a codestream decompositing unit to receive a codestream including a marker segment in which information is attached that indicates the size of image **prior to its size adjustment**" wherein "its" means the image instead of the codestream.

Applicant failed to provide support to the claimed feature of a marker segment in which information is attached that indicates the size of image prior to performing the size adjustment to the image. In the JPEG 2000 codestream, the marker segment indicates the size of the image AFTER its size is adjusted and then compressed into the codestream. The COM tag marker segment is included in the code-stream after the code-stream generation unit 45 generates the code-stream. The size of the image is indicated in the COM tag marker segment AFTER its size is adjusted, as opposed to BEFORE its size is adjusted, in a marker segment (by JPEG 2000 encoder) included in the code-stream after the codestream is generated.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 20-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 recites the limitation "the codestream decoding unit" in line 5 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 set forth the recitation of "if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains" set forth in the image size adjusting unit of the claim 20. Applicant failed to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed feature of the image size adjusting unit of the claim 20 "if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains" is not what the image size adjustment unit does. The image size adjustment unit performs the function that adjusts the size of the image. The claim limitation currently set forth in the claim 20 does not perform the image size adjusting. This is in contrary to the claim limitation of the "image size adjusting" set forth in the claim 20.

Applicant's claim 20 also set forth the recitation "an attaching unit to attach information indicating the size of the image **before its size is adjusted**, in a marker segment included in the code-stream formed by the code-stream generation unit." Applicant failed to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The attaching unit follows the image size adjusting unit wherein the image size adjustment unit

performs the image size adjustment. The attaching unit performs the attaching operation by recording the COM tag in the code-stream after the code-stream generation unit 45 generates the code-stream. The attaching unit indicates the size of the image AFTER its size is adjusted by the image size adjusting unit, as opposed to BEFORE its size is adjusted, in a marker segment (by JPEG 2000 encoder) included in the code-stream formed by the code-stream generation unit.

The claims 21-22 depend upon the claim 20 and are rejected due to their dependency on the claim 20.

The claim 24 is subject to the same rationale of rejection set forth in the claim 20.

Applicant's claim 23 set forth the recitation "a codestream decompositing unit to receive a codestream including a marker segment in which information is attached that indicates the size of image **prior to its size adjustment**." Applicant failed to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The COM tag marker segment in the code-stream is included in the codestream after the code-stream is generated. The size of the image is indicated in the COM tag marker segment AFTER its size is adjusted, as opposed to BEFORE its size is adjusted, in a marker segment (by JPEG 2000 encoder) included in the code-stream after the codestream is generated.

The claim limitations set forth in the §112 rejection discussed above are best interpreted in the art rejection to follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 20-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chui et al. U.S. Patent No. 6,904,176 (hereinafter Chui) in view of Satoh et al. U.S. Patent No. 6,895,120 (hereinafter Satoh) and Murao U.S. Patent No. 6,141,452 (hereinafter Murao).

Re claims 20-22 and 24, Chui discloses an image processing apparatus, comprising:

An image reading unit to read an image (Chui Figs. 29-30, e.g., dataport 3060 for sending and receiving images, e.g., from the image files);

An image size adjusting unit to adjust the size of the image read by the image reading unit if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains;

Also referring to the claim 21, Chui discloses an encoder having an image size adjusting unit. Chui discloses processing logic divides each image of different resolution into a number fixed sized tiles. When the image cannot be divided evenly, padding by 0's may be necessary as shown in Fig. 2A (meeting the claim limitation set forth in the claim 22) wherein padding by 0's adjusts the size of the image. In Fig. 2A, an image at full resolution is divided into equal sized square tiles and because the last column of tiles are not square, zeros have been added onto the right edge of the image to enable the last column of tiles to be square. The fixed sized tiles are

further labeled. The processing logic encodes each tile by encoding the (i, j)th tile of the lowest resolution using JPEG as shown in Fig. 3A. The JPEG encoder encodes the tile to create compressed bitstream to be sent to the decoder. The claim recites "size adjusted image", however, notwithstanding Chui's disclosure of adjusting the size of the original image, Chui also discloses compressing bitstream, thus adjusting the size of image at the stage of discrete cosine transform.

A compressing unit to divide the image output from the size adjusting unit into one or more tiles and to compress the image by the tiles to generate code data;

Chui discloses an encoder having a compressing unit. Chui further discloses the image encoder module 3070 which include an encoder control program controlling the processing of compressing and encoding an image (See column 17, lines 5-15).

Chui discloses adjusting the size of the image to create a quantized DCT transformed image tile wherein the quantized DCT transferred image tile is entropy encoded to create compressed bitstream (Chui column 6, lines 44-63).

A code-stream generating unit to combine the code data generated by the compressed unit to generate a codestream;

Chui discloses an encoder having a code-stream generating unit. Once all the tiles of an image have been transformed, compressed and encoded, the resulting encoded image data is stored as an image file wherein the image file includes header data and a sequence of image data structures (See column 18, lines 15-20). The header of the image file includes the information needed to access the various image subfiles wherein the header stores a parameter value that indicates the number of image subfiles in the file and the size of each image data structure. Each

image subfile has a header and a sequence of bitstreams wherein the header data of each base image subfile includes fields that indicate the size of the image subfile and the size of the tiles used to tile the image, the number of bitstreams encoded for the image for each tile of the image and the header information for each bitstream including the size of the bitstream (See column 18, lines 40-67 and column 19, lines 1-20).

An attaching unit to attach information indicating the size of the image before its size is adjusted, in a marker segment included in the codestream formed by the codestream generation unit.

Therefore, the encoded image as stored in the image file contains information related to the size of the tiles used to tile the image and the number of image subfiles leading to the size of the image. Chui is seen to disclose an image encoder unit or the compressing unit that performs the function of the information attaching unit to attach to the codestream (bitstream of the encoded image), the size of the tiles, the number of the image subfiles, the size of each image data structure and thus Chui discloses the claim limitation of "information related to the size of the image".

Chui thus further discloses an information attaching unit to attach, to the codestream, information related to the size of the image.

It needs to be shown whether Chui explicitly discloses attaching information indicating the size of the image in a marker segment included in the code-stream formed by the code stream generation unit.

Chui implicitly discloses the claim limitation of attaching information indicating the size of the image in a marker segment included in the code-stream formed by the code stream

generation unit. Once all the tiles of an image have been transformed, compressed and encoded, the resulting encoded image data is stored as an image file wherein the image file includes header data and a sequence of image data structures (See Chui column 18, lines 15-20). The header of the image file includes the information needed to access the various image subfiles wherein the header stores a parameter value that indicates the number of image subfiles in the file and the size of each image data structure. Each image subfile has a header and a sequence of bitstreams wherein the header data of each base image subfile includes fields that indicate the size of the image subfile and the size of the tiles used to tile the image, the number of bitstreams encoded for the image for each tile of the image and the header information for each bitstream including the size of the bitstream (See column 18, lines 40-67 and column 19, lines 1-20).

Satoh further discloses setting zero bitplanes and using extra bits to give more tag tree information in a tile component level partition in JPEG 2000 compliant encoding algorithm; e.g., column 2, 24 and 28-30. Satoh further discloses the codestream relating to a tile, organized in packets, are arranged in one, or more, tile-parts and a tile-part header, comprised of a series of markers and marker segments or tags contains information about the various mechanisms and coding styles that are needed to locate, extract, decode and reconstruct every tile-component. Satoh discloses other claim limitations set forth in the claim 20 and similar claims as well.

For example, Satoh discloses

An image reading unit to read an image (Fig. 29);

An image size adjusting unit (column 30) **to adjust the size of the image read by the image reading unit if the size of the read image is not an integral multiple of a predetermined tile size and, when divided into tiles, an odd image portion remains;**

A compressing unit to divide the image output from the size adjusting unit into one or more tiles and to compress the image by the tiles to generate code data (*column 28 and 30, Satoh further discloses the MQ coder generating a codestream relating to a tile, organized in packets having the packet headers for a tile and the packets are arranged in one, or more, tile-parts and a tile-part header and column 2 wherein the cited reference discloses that the compressing mechanism including the wavelet transformation, quantization and entropy coding in which the code-block are entropy coded with three coding passes wherein the entropy coder reduces the number of bits required to represent the quantized coefficients compared to the original image*);

A code-stream generating unit to combine the code data generated by the compressed unit to generate a codestream (*column 28 and 30 wherein the codestream is generated by the MQ coder*);

An attaching unit to attach information indicating the size of the image before its size is adjusted, in a marker segment included in the codestream formed by the codestream generation unit (*see column 2, 28 and 30, the codestream relating to a tile, organized in packets are arranged in one or more tile parts and a tile-part header, comprised of a series of markers and marker segments, or tags contains information about the various mechanisms and coding styles that are needed to locate and extract every tile-component. At the beginning of the entire codestream is a main header comprised of markers and marker segments that offers similar information as well as information about the original image*).

It would have been obvious to have combined the teachings of Satoh and Chui to encode the original mage into the size-adjusted image using the JPEG encoder so that the original image

is encoded. Both Satoh and Chui disclose the JPEG encoding process (See Chui column 15, line 1 and Satoh column 2, 24 and 29-30). Therefore, having the combined teaching of the cited references, one of the ordinary skill in the art would have been motivated to do so to allow the generation of a code-stream via lossless compression of the original image (Satoh *column 2*).

It needs to be shown whether Chui and Satoh teach the claim limitation of "if the size of the read image is not an integral multiple of a predetermined tile size and when divided into tiles, an odd image portion remains."

Chui discloses processing logic divides each image of different resolution into a number fixed sized tiles. When the image cannot be divided evenly, padding by 0's may be necessary as shown in Fig. 2A wherein padding by 0's adjusts the size of the image. In Fig. 2A, an image at full resolution is divided into equal sized square tiles and because the last column of tiles are not square, zeros have been added onto the right edge of the image to enable the last column of tiles to be square. **The fixed sized tiles are further labeled.** The processing logic encodes each tile by encoding the (I, j)th tile of the lowest resolution using JPEG as shown in Fig. 3A. The JPEG encoder encodes the tile to create compressed bitstream to be sent to the decoder. Thus, Chui at least suggests the claim limitation "if an image is not evenly divisible into a number of fixed size regions that are equivalently sized, adjust the size of the image" because padding by 0's to the image adjusts the size of the image.

Murao demonstrates the claim limitation Fig. 7b and 7d, column 5, lines 15-25 and column 6, lines 48-60, the image size adjusting unit adjusts size of the original image to the suitable size for a Wavelet transform.

It would have been obvious to have combined the teachings of Chui, Satoh and Murao to adjust the size of the original image so that the image is evenly divisible into a number of fixed size tiles. Doing so would allow the efficient compressing and restoring of the images to reduce the computing time and the amount of memory needed using the Wavelet transform and inverse Wavelet transform (Murao column 3, lines 25-30, Chui Fig. 2A and Satoh column 28 and 30).

Claim 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satoh et al. U.S. Patent No. 6,895,120 (hereinafter Satoh) in view of Chui et al. U.S. Patent No. 6,904,176 (hereinafter Chui).

Satoh discloses an image processing apparatus, comprising:

A codestream de-compositing unit to receive a codestream including a marker segment in which information is attached that indicates the size of image prior to its size adjustment, and to de-composite the codestream into code data (Fig. 1, the JPEG 2000 code-stream is made from the bitstreams and headers. Satoh column 2-3, 24 and 29-30 for the reconstruction of every tile-component of the original image; Satoh *column 2-3 wherein Satoh discloses receiving a compressed image data codestream wherein the JPEG 2000 codestream headers inherently include a marker segment in which information is attached that indicates the size of image, the bitstream is received data ordering block 101 that regroups layers and subband coefficients, arithmetic coder 102 decode the compressed bitstream; See column 22 wherein JPEG 2000 decoder-MQ coder de-composite the codestream into code data such as MPS or LPS codes wherein coded data are stored in the memory*);

A decoding unit to decode a code data outputted by the codestream decoding unit into the image (*Satoh discloses the new JPEG 2000 decoding standard which utilizes transforms and provides a new coding scheme and codestream definition for images in which each image may be divided into rectangular tiles and if there is more than one tile, the tiling of the image creates tile-components and an image may have multiple components and tile components can be extracted and decoded independently of each other; see column 1, line 55 to column 3, lines 7 and column 11, lines 33-65*);

An image size inverse-adjusting unit to inverse-adjust the decoded image by the decoding unit based on the information indicating the size of the image prior to its size adjustment (*e.g., column 19, lines 19-36; column 26, lines 16 to column 27, line 33. Satoh discloses creating the bit stream compressed image data from these coding passes as grouped in layers contributing to a higher quality image and adding pixels of a predetermined pixel value to the image in the reconstruction of the original image. Satoh further discloses setting zero bitplanes and using extra bits to give more tag tree information in a tile component level partition in JPEG 2000 compliant decoder algorithm; e.g., column 2, 24 and 29-30. Satoh further discloses the codestream relating to a tile, organized in packets, are arranged in one, or more, tile-parts and a tile-part header, comprised of a series of markers and marker segments or tags contains information about the various mechanisms and coding styles that are needed to locate, extract, decode and reconstruct every tile-component. Satoh discloses regouping layers and subbands coefficients and arithmetic coder uses contextual information from previously coded coefficients provided by the bit modeling block about the bit-plane compressed image data and its internal stage to decode a compressed bit stream; column 2*);

An image-writing unit to write the image after its size is inverse-adjusted by the image size inverse-adjusting unit (*output data after decoding in Fig. 29 and column 6 and the image after inverse-adjustment is written into the memory and DC level shifting provides a reconstructed image*).

Satoh does not explicitly disclose an image-writing unit.

Chui discloses the claim limitation of an image-writing unit (Chui Figs. 15-21) in which Chui discloses the encoded image bitstream is received by the client and the client may decode the image bitstream using a decoder and *display the image* (See column 14, lines 38-67) and the client uses a decoder to decode the encoded image to create a 16 by 16 pixel image...the image 304 may be displayed based on the available display size wherein the image 304 is the size adjusted image. Chui further discloses a portable client device to locate any portion of the image, at any resolution level, without having to decode the contents of any other portions of the image file (See column 20, lines 1-5).

Chui discloses other claim limitations set forth in the claim 23 and 25 as well (See Chui column 17 wherein Chui discloses a decoding mechanism performing the functions as claimed as the decoding is the opposite flow to the encoding mechanism set forth in the claim 20).

It would have been obvious to have combined the teachings of Chui to reconstruct the original image from the size-adjusted image using the JPEG decoder so that the original image is reconstructed after the encoding process. This is because JPEG decoder allows for the decoding process to be performed without loss of information. Both Satoh and Chui disclose the JPEG decoding process (See Chui column 15, line 1 and Satoh column 2, 24 and 29-30). Therefore, having the combined teaching of the cited references, one of the ordinary skill in the art would

have been motivated to do so to allow the reconstruction of every tile-component of the original image (Satoh *column 2*).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jcw

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